9.0 Recommendations

Based on the study findings, we offer the following recommendations regarding California's hazardous liquid pipelines:

a. Industry and/or the California State Fire Marshal should consider implementing programs aimed at reducing external corrosion. These programs could include work regarding:

- external corrosion coating effectiveness,
- cathodic protection system effectiveness,
- refurbishment of deteriorated coatings,
- protection of bare pipelines,
- cathodic protection system interferences in urban areas,
- external corrosion coating and cathodic protection system effectiveness on pipelines operated at high temperatures,
- internal inspection tool effectiveness at identifying externally corroded areas,
- new cathodic protection technologies, etc.

b. Additional regulations should *not* be promulgated regarding pipelines near railroad rights-of-way. We did not find an increased incident rate for lines near rail lines which would necessitate any such regulations.

c. Additional regulations should *not* be promulgated which would require block valves or check valves at established maximum spacings. However, operators should review situations in which they have individual line segments longer than about 10 miles. Depending on local terrain and other factors, they may benefit from additional block valves in some of these situations. Operators should regularly test any block or check valves installed on their systems to verify their integrity.

d. The California State Fire Marshal should review the *high risk* intrastate pipeline program using the results of this study.

We did not find a clear correlation between increased hydrostatic test intervals and the resulting frequency of incidents. As a result, more benefits could likely be obtained by redirecting the monies currently expended on additional hydrostatic testing (estimated at $2,000,000 per year) to other activities aimed at reducing external corrosion leaks (e.g. pipeline replacements, recoating, cathodic protection system upgrades, internal inspections, etc.).

The California Pipeline Safety Act allows operators to apply for hydrostatic test *waivers* from the California State Fire Marshal. Operators should use the existing *waiver* process to propose other activities (e.g. pipe segment replacements, recoating, internal inspections, etc.) in lieu of additional hydrostatic testing on their *high risk* pipelines when such work

will likely result in fewer leak incidents.

e. The regular Safety Seminars and other training programs provided by the California State Fire Marshal should be continued. This training is not only valuable to the pipeline operators; it is also useful to public agencies, including the fire service. Further, the Pipeline Safety Advisory Committee is an excellent forum to communicate regularly with pipeline operators and the fire service; it should be continued.

f. An abbreviated report, covering the items included in Section 4.0 of this study, should be prepared every 5 to 10 years. The goals of this study should be to identify incident rate trends, review current regulation effectiveness, and recommend change. To this end, the California State Fire Marshal should require the pipeline operators to submit leak data similar to that collected in this study.

The California Government Code §51018 should be revised to require reporting in the selected format to the California State Fire Marshal. The present code language should also be revised to clarify the requirement for reporting leaks which occur during hydrostatic testing.

g. Future legislation aimed at reducing injuries and fatalities should consider the differences between crude oil and petroleum product pipelines. Any more stringent requirements for product pipelines should also consider the differences in risk between various petroleum products (e.g. diesel versus gasoline).

h. The permitting process should be streamlined to the greatest extent possible for pipeline replacement projects. Every effort should be made to remove obstacles and to encourage pipeline operators to replace older pipelines with high leak-history. The possibility of reduced franchise fees for replacement lines should also be considered to increase the incentives for owners to replace older sections of high leak-history pipe.

There have been several recent incidents in which pipeline replacement projects have been delayed because of local permitting problems. Further, perceived federal, state and local permitting costs and problems have forced some pipeline operators to shy away from replacement projects. This can result in two possibilities: the operator continues to operate the relatively high incident rate pipe, or the volumes are diverted to other less safe means of transportation (e.g. tanker trucks, etc.).

i. We believe that the increased efforts aimed at reducing third party damage, especially the one-call system, have been very successful and should be continued.